

MANAGING INSTRUCTION SIDE-EFFECTS

ABSTRACT

A computer. When an instruction calling for an architecturally-visible side-effect in an architecturally-visible storage location is recognized, a value is stored representative of an architecturally-visible representation of the side-effect, a format of the representative value being different than an architecturally-visible representation of the side-effect. Execution is resumed without generating the architecturally-visible side-effect. Later, the architecturally-visible representation corresponding to the representative value is written into the architecturally-visible storage location. On a context switch, a context of a first process is written and a context of a second process is loaded to place the second process into execution. At least some instructions maintain results in storage resources outside the context resource set, and instructions are marked to indicate whether or not a context switch may be performed at a boundary of the marked instruction. Instruction execution is monitored for a condition that is a superset of a condition whose occurrence is desired to be detected, and a first exception is raised as a result of recognizing the superset condition. Software filters the superset condition to determine whether the monitored condition has occurred, and if so, the software establishes a second exception to be raised after execution of further instructions of the instruction stream. When it is recognized that an instruction is to affect the execution of a second instruction, the processor is set into single-step mode. After the second instruction is executed, the computer is set out of single-step mode.

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